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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/705,899	11/13/2003	Joun Ho Lee	8733.275.20-US	6109

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EXAMINER	
NGUYEN, HOAN C	

ART UNIT	PAPER NUMBER
2871	

MAIL DATE	DELIVERY MODE
05/06/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/705,899	LEE ET AL.	
	Examiner	Art Unit	
	HOAN C. NGUYEN	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 February 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 25-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 25-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/17/2009 has been entered.

Applicants admitted that Kim et al. (US 6356335) and the instant application were commonly assigned or subject to an obligation of assignment to LG. Philips LCD Co. at the time of this invention.

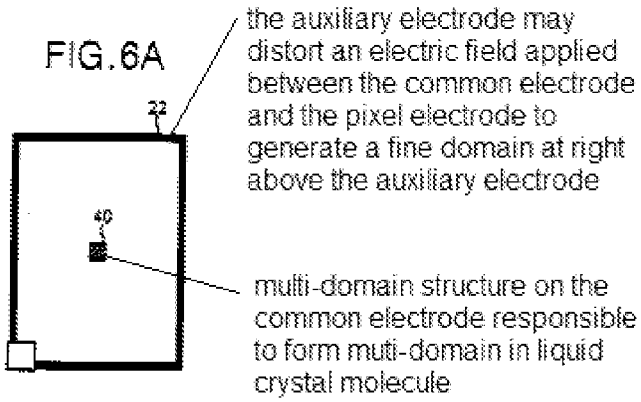
Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the combination of "each pixel region has a multi-domain structure which includes a dielectric structure or slit" and "the common electrode includes an opening area" to form the multi-domain in claim 1 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

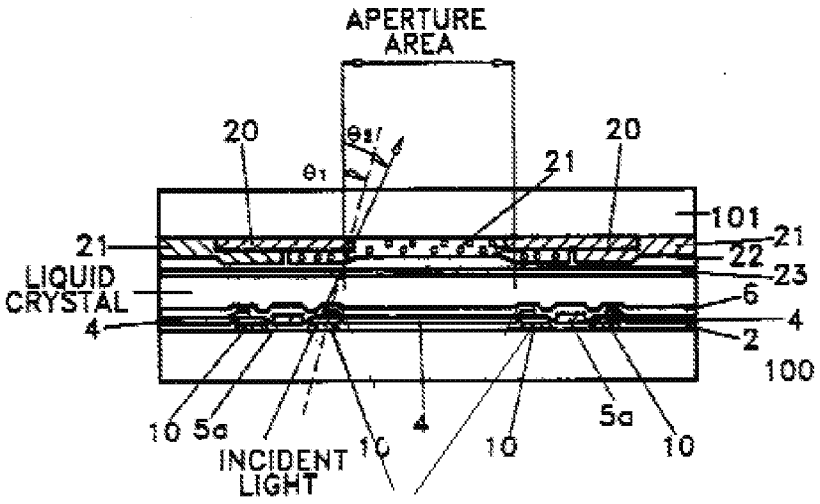
Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate

prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

In the light of the specification, the opening area in the common electrode should form the multi-domain structure. However, although the auxiliary electrode line takes advantage of the gate signal applied to the gate lines, the auxiliary electrode line by itself cannot form the multi-domain without combing with the multi-domain structure (opening) in common electrode. The auxiliary electrode line takes advantage of the gate signal applied to the gate lines would cause the disturbance of liquid crystal molecules because the auxiliary electrode may distort an electric field applied between the common electrode and the pixel electrode to generate a fine domain at right above the auxiliary electrode as shown in Fig. 6A below:



In the same way, the applied reference Kim et al. (US5767926A) discloses the auxiliary electrode line 10 takes advantage of the gate signal applied to the gate lines would cause the disturbance of liquid crystal molecules because the auxiliary electrode may distort an electric field applied between the common electrode and the pixel electrode to generate a fine domain at right above the auxiliary electrode as shown in Fig. 8 below:



Claim Rejections - 35 USC § 103

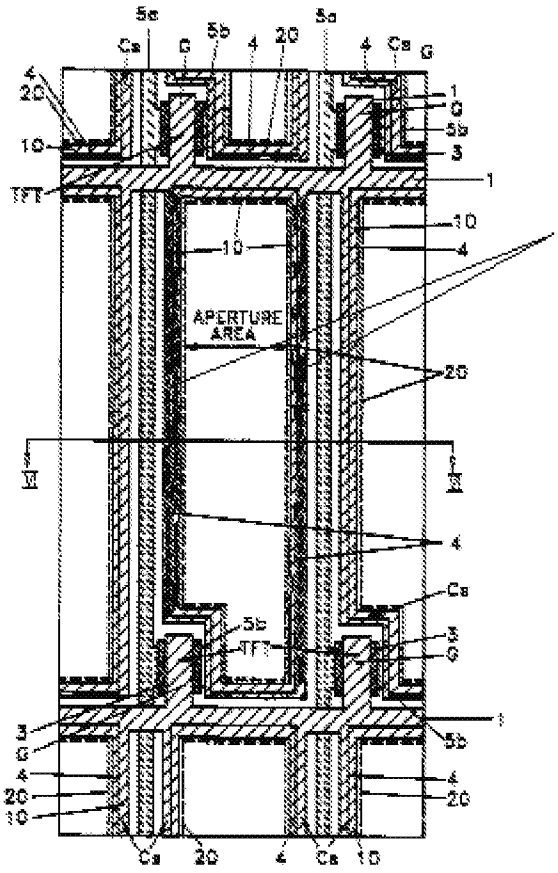
The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Kim et al. (US5767926A) and Suzuki et al. (US6256082B1).

In regard to claim 1, Kim et al. disclose (Figs. 3G-J) a multi-domain liquid crystal display device comprising:

- first and second substrates ;
- a liquid crystal layer between the first and second substrates;
- a plurality of data lines 5a for applying a data signal on the first substrate;
- a plurality of gate lines 1 for applying a gate signal, the gate lines crossing the data lines to define a plurality of pixel regions,
- a thin film transistor near each crossing of the gate lines and the data lines;
- a common electrode 17 on the second substrate;
- a pixel electrode 13 connected to a drain electrode of the thin film transistor in each pixel region; and
- an auxiliary electrode line 10 electrically connected to at least one of the common lines in each pixel region,



the auxiliary electrode line connects to gate line and takes advantage of the gate signal applied to the gate lines would cause the disturbance of liquid crystal molecules because the auxiliary electrode may distort an electric field applied between the common electrode and the pixel electrode to generate a fine domain at right above the auxiliary electrode

wherein

- the auxiliary electrode line is formed between the pixel electrode and the data line at an outside of the pixel electrode in the pixel region and the auxiliary electrode is not overlapped with the data line.
- the auxiliary electrode line inherently takes advantage of the gate signal applied to the gate lines.

Claim 32:

- the auxiliary electrode line is formed in the same layer as the gate lines.

Kim et al. fail to disclose each pixel region having a multi-domain structure which includes slit or opening area in the common electrode; thus the auxiliary electrode line and the multi-domain structure distorting an electric field applied between the common electrode and the pixel electrode to thereby form at least two domains in each pixel region during an operation of the multi-domain liquid crystal display and the auxiliary electrode line takes advantage of the gate signal applied to the gate lines inherently to form the multi-domain.

Suzuki et al. teach the common electrode including an opening area that is a multi-domain structure in each pixel region; thus the combination of the auxiliary electrode line and the multi-domain structure (opening in common electrode) distorting an electric field applied between the common electrode and the pixel electrode to thereby form at least two domains (shown in Fig. 7A-C) in each pixel region during an operation of the multi-domain liquid crystal display. The auxiliary electrode line inherently takes advantage of the gate signal applied to the gate lines to form the multi-domain with combining with the multi-domain structure (opening in common electrode).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a multi-domain liquid crystal display device as Kim et al. disclosed with the combination of common electrode including an opening area and the auxiliary electrode line taking advantage of the gate signal applied to the gate lines for generating an oblique field based on difference in size between the

upper and the lower electrodes, by which liquid crystal molecules are tilted in a divided manner to form multi-domain (col. 10 lines 18-20) as Suzuki et al. taught.

2. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US5767926A) and Suzuki et al. (US6256082B1) as applied to claims 1 and 32 in view of Takeda et al. (US 6724452 B1).

Kim et al. fail to disclose a dielectric structure 53 on the second substrate.

Takeda et al. teach a multi-domain liquid crystal display device with a dielectric structure (dielectric protrusion) on the second substrate as domains regulating means for providing the ion adsorption capacity to the dielectric structure.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a multi-domain liquid crystal display device as Kim et al. disclosed with a dielectric structure (dielectric protrusion) on the second substrate as domains regulating means for providing the ion adsorption capacity to the dielectric structure as taught by Takada et al. (col. 73 lines 10-17).

1. Claims 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US5767926A) and Suzuki et al. (US6256082B1) as applied to claims 1 and 32 in view of Yamamoto et al. (US5657100A).

Kim et al. fail to disclose the liquid crystal layer having a negative or positive dielectric anisotropy.

Yamamoto et al. teach a liquid crystal display device wherein the liquid crystal layer has a positive dielectric anisotropy for obtaining high contrast ratio (col. 5 lines 22-31) or the liquid crystal layer has negative dielectric anisotropy for obtaining low contrast ratio (col. 7 lines 14-21).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a multi-domain liquid crystal display device as Kim et al. disclosed with the liquid crystal layer having a positive dielectric anisotropy for obtaining high contrast ratio (col. 5 lines 22-31) or the liquid crystal layer has negative dielectric anisotropy for obtaining low contrast ratio (col. 7 lines 14-21) as Yamamoto et al. taught

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a multi-domain liquid crystal display device as Kim et al. disclosed with the liquid crystal layer has a positive dielectric anisotropy for obtaining high contrast ratio as taught by Yamamoto (col. 5 lines 22-31) or the liquid crystal layer has negative dielectric anisotropy for obtaining low contrast ratio as taught by Yamamoto (col. 7 lines 14-21).

2. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US5767926A) and Suzuki et al. (US6256082B1) as applied to claims 1 and 32 in view of Shimada (US5710609A).

Kim et al. fail to disclose the liquid crystal layer includes a chiral dopant.

Shimada teaches the liquid crystal layer including a chiral dopant.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a multi-domain liquid crystal display device as Kim et al. disclosed with the liquid crystal layer including a chiral dopant for adjusting the twist pitch (col. 4 lines 54-55) as Shimada taught.

3. Claims 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US5767926A) and Suzuki et al. (US6256082B1) as applied to claims 1 and 32 in view of VanderPloeg et al. (US5859681A).

Kim et al. fail to disclose a multi-domain liquid crystal display device with a phase-differential film on at least one of the first and second substrates, wherein the phase-differential film includes a negative uniaxial film (claim 30) or the phase-differential film includes a negative biaxial film (claim 31).

VanderPloeg et al. teach a liquid crystal display device with a phase-differential film on at least one of the first and second substrates, wherein the phase-differential film includes a negative uniaxial film (claim 30) or the phase-differential film includes a negative biaxial film (claim 31) for providing improved contrast (col. 1 lines 20-21).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify with a phase-differential film on at least one of the first and second substrates, wherein the phase-differential film includes a negative uniaxial film (claim 30) or the phase-differential film includes a negative

biaxial film (claim 31) for providing improved contrast as VanderPloeg et al. taught (col. 1 lines 20-21).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (571)272-2296. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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